Utility Interconnection Equipment Certification

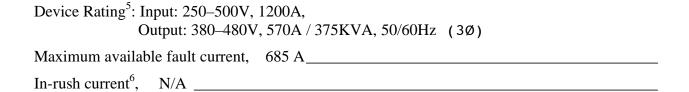
The information on this form is provided to indicate the compliance of the generation equipment listed below with the utility interconnection certification requirements defined in California PUC Electric Rule 21

<u>Certifying Laboratory</u> The information on the Recognized Test Laboratory	is form is provided by the follow	ring Nationally
·		
Laboratory: Intertek ETL Semko		:1.
Contact Name: Frank Serra		
Address: 3210 American Drive		
City: Mississauga		
Accredited by:	Date:	
Accredited to (test standards) ¹ : Safety for in Independent Power Systems, UL 1741 (First up to November 7 th , 2005)	Edition, Dated May 7, 1999 inc	
Equipment Specification The information on	this form applies to the followin	g equipment
Equipment Manufacturer: Fuel Cell Energy/Sa	atcon Power Systems	
Address: 3 Great Pasture Road		
City: Danbury	State CN	Zip 06813
Model Number(s): Fuel Cell Energy Inc. Mode inverter model AE-375-50-F-U-04		
Software Version(s): PC-01100-S069-C		
Effective ² :		
Device Description ³ : The products covered by the forced air-cooling housed within listed Type fuel cells and converts it into 3Ø a.c. power for permanently installed in an unclassified, indoor The unit (Model No. AE–375–50–F–U–04) re 227.5cm (89-1/2") high and weighs approximate	3R enclosure that receive power utility-interactive applications a voutdoor location. measures 244cm (96") wide, 100	er from (external) and intended to be
The product output is intended to have a point of the building service equipment (location categories)		

Test Results⁴

Mark the box next to each requirement that has been met and each test that has been performed and successfully passed. Provide an explanation of any exceptions or omissions on a separate sheet. List additional test documents used on a separate sheet

Result	Test	Standard Before 11/07/05	Standard After 11/07/05
Ø	Utility Interaction	UL1741 Sect. 39	IEEE1547.1 Sect. 5.2, 5.3
N/A	DC Isolation	UL1741 Sect. 40.1	IEEE1547.1 Sect. 5.6
	Max. and min. input voltage	UL1741 Sect. 41.2	UL1741 Sect. 41.2
$\overline{\checkmark}$	Dielectric Voltage Withstand	UL1741 Sect. 44	UL1741 Sect. 44
Ø	Output Ratings	UL1741 Sect. 45.2	UL1741 Sect. 45.2
V	Harmonic (Stand-Alone)	UL1471 Sect. 45.4.1	UL1741 Sect. 45.4.1
Ø	Harmonic (Grid Tie)	UL1741 Sect. 45.4.2	IEEE1547.1 Sect. 5.11
N/A	DC injection	UL1741 Sect. 45.5	IEEE1547.1 Sect. 5.6
$\overline{\checkmark}$	Grid Abnormal Conditions	UL1741 Sect. 46.2	IEEE1547.1 Sect. 5.2, 5.3
Ø	Reconnection to Grid	UL1741 Sect. 46.2.3	IEEE1547.1 Sect. 5.10
$\overline{\checkmark}$	Anti-islanding Test	UL1741 Sect. 46.3 (J3.b)	IEEE1547.1 Sect. 5.7
$\overline{\checkmark}$	Loss of Control Circuit	UL1741 Sect. 46.4	UL1741 Sect. 46.4
$\overline{\checkmark}$	Short Circuit Test	UL1741 Sect. 47.3	UL1741 Sect. 47.3
N/A	Load Transfer Test	UL1741 Sect. 47.7	UL1741 Sect. 47.7
$\overline{\checkmark}$	Surge Withstand	Rule 21 J.3.e	IEEE1547.1 Sect. 5.5.2
$\overline{\checkmark}$	Synchronization	Rule 21 J.3.f	IEEE1547.1 Sect. 5.4
N/A	Non-export	Rule 21 J.3.c	Rule 21 J.3.c
N/A	In-rush Current	Rule 21 J.3.d	IEEE1547.1 Sect. 5.4.4
$\overline{\mathbf{V}}$	Temperature Stability		IEEE1547.1 Sect. 5.1



Trip settings (Magnitude/Timing)⁷: (See test report for details)

		Factory Voltage Setting	Factory timing Setting
Fast Over Voltage	Setting	332.4 V	30msec
	Measured	332.4 V	27msec
Over Voltage	Setting	304.7 V	530msec
	Measured	303.9 V	526msec
Under Voltage	Setting	243.8 V	530msec
	Measured	243.5 V	526msec
Fast Under Voltage	Setting	221.6 V	30msec
	Measured	222.1 V	26msec
Over Frequency	Setting	60.50 Hz	60msec
	Measured	60.49 Hz	58msec
Under Frequency	Setting	59.5 Hz	60msec
	Measured	59.49 Hz	57msec

Note: Trip settings are field adjustable. See test report for details and additional results.

Nominal Power l	Factor (Rai	nge, if	adji	ustable) Adjustable 0.8 to 1.0 at full load
Non Islanding:	Yes	No	<u>X</u>	Maximum trip time:
Non Export:	Yes	No	X	Method:
Other ⁸ :				

Notes:

- Accreditation must apply to test standards listed herein.
- Note here the date of certification, applicable serial number (range or first in series), or other information that indicates to which units the certification applies.
- List appropriate functions, capabilities, applications, limitations, etc. Use additional sheets as necessary.
- List all test documents (i.e. UL 1741, IEEE C62.45) and specific procedures (i.e. UL 1741 Sec 39.1 39.5, etc.) used to evaluate device's suitability for utility interconnection
- For devices that use grid power to motor to speed.
- ⁶ For devices that use grid power to motor to speed.
- Enter trip magnitude, Voltage in volts or frequency in Hz, and trip timing, in cycles into each square (Magnitude/Timing). Devices with adjustable settings shall provide test results over the range of settings. For each test setting provide the setting values in the upper box and measured results in the lower box. List device ranges, if adjustable. Show data for one phase (greatest % difference between setting and measured magnitudes as well as the maximum trip time for that setting). Provide data for all phases (on additional sheets) if measured trip values for any two phases differ by more than 3% (for the same setting).

Notes:

Provide any additional information that may be useful in evaluating these results such as test configurations, device settings used to meet requirements, etc. Use additional sheets if necessary.